Amendments to the Drawing

In the sole Figure, the blank box next to element 24 has been removed. Applicants have attached an Annotated Sheet showing this amendment (i.e., removal of blank box). Applicants request that the sole Figure be replaced with the attached Replacement Sheet including the sole Figure amended as described above.

Attachments: 1 Replacement Sheet

1 Annotated Sheet Showing Changes

REMARKS

In the Final Office Action, the Examiner objected to the drawing under 37 C.F.R. § 1.84 for being unclear. In addition, the Examiner maintained his rejection of claims 1-23 under 35 U.S.C. § 112, ¶ 1 because the specification allegedly does not provide enablement for the cycle time of the finished cast part to be determined by the cycle time of core production. In an effort to advance prosecution and without conceding to the Examiner's reasoning presented on pages 2-3 of the Final Office Action, Applicant has amended independent claims 1 and 17. Applicant submits that no new matter has been introduced by the present amendments to the claims and drawing. For example, the amendments to claims 1 and 17 are supported by the English translation of the Application as originally filed on December 29, 2005 ("Original Application") at least at page 4, ¶ 3 (i.e., second full paragraph) to page 5, ¶ 2 (i.e., first full paragraph); page 5, ¶ 4; and page 6, ¶¶ 1 and 3. The amendment to the drawing is supported by the original drawing in connection with pages 10-14 of the Original Application.

In view of the amendments to the claims and drawing, together with the following remarks, Applicant respectfully requests the reconsideration and withdrawal of all grounds of objection and rejection.

Objection under 37 C.F.R. § 1.84

The drawing was objected to under Rule 1.84 in that the Applicant deleted reference numeral "25" without replacing it with any number or character. As a result of the deletion, the Examiner objects to the drawing as it is unclear what a blank box represents.

Applicant has amended the drawing to remove the blank box next to element 24 to correct an editing error. Applicant notes that element 25 refers to a conveyor section between the casting mould manipulator (robot) 22 and finishing unit 26, and not to a box next to element 24. *See, e.g.,* Original Application at page 12, last paragraph to page 13, ¶ 5; and page 14; *see also* the Drawing. The specification does not describe an element or a box connected to processing unit 24, and thus their deletion is consistent with the originally-filed specification. Applicant believes this amendment addresses the Examiner's concerns with respect to the drawing. Accordingly, Applicant respectfully requests the reconsideration and withdrawal of the objection to the drawing.

35 U.S.C. § 112, ¶ 1 Rejections

Claims 1-23 were rejected under 35 U.S.C. § 112, ¶ 1 for lack of enablement. On pages 2-3 of the Final Office Action, the Examiner asserted that the specification does not reasonably provide enablement for the cycle time of the finished cast part to be determined by the cycle time of core production. In particular, the Examiner asserts that having the core making machine and the demoulding unit related to each other does not necessarily mean that the cycle time of the demoulding unit is determined by the cycle time of the core production unit. For example, on pages 2-3 of the Final Office Action, the Examiner alleges that "the cycle time of the demoulding unit can be determined by the moving speed of conveyor 12, 15, 19, or 20 or vice versa while maintaining the cycle time of [the] core production unit constant."

Applicant respectfully disagrees with the Examiner's assertions that the specification does not enable (i.e., teach how to make and use the invention without

undue experimentation) Applicant's claim limitation "a first cycle time with which the finished cast parts are output is determined by a second cycle time with which the casting cores are produced." Applicant notes that enablement is provided if the "specification discloses at least one method for making and using the claimed invention" and pages 10-13 and the Drawing describe an embodiment in which units 2-6 are linked directly (i.e., passed through one another without interruption) resulting in Applicants' claimed first cycle time with which the finished cast parts are output is determined by a second cycle time with which the casting cores are produced. *See, e.g.,* MPEP 2164.01(b) and the Original Application at page 5, ¶ 2 and pages 10-13. However, in the interest of expediting prosecution, Applicant has amended independent claims 1 and 17 to further define the relationship between the functional units (e.g., core production unit 2, mould assembly unit 3, casting unit 4, cooling unit 5a, demoulding unit 5b, and quenching unit 5c) in the production line to require continuous flow without interruption. As a result, Applicant submits that continuous flow between the functional units requires that the cycle time of the demoulding unit 5b has to be determined by the cycle time of the core production unit 2 as to prevent the interruption or accumulation of units (e.g., casting cores) along the production line 1.

Applicant's independent claim 1 is directed to a production line for the production of cast parts from a metallic melt, which takes place in a continuous cycle and comprises a plurality of functional units. The functional units are directly connected to each other by a respective conveying device and "are completed directly without interruption in a continuous flow." Applicant's independent claim 17 is directed to a method for

automatically producing cast mould parts from a molten metal. Applicant's claim 17 recites that "the working steps are passed through in a continuous production sequence ... [and] the functional units are completed directly without interruption in a continuous flow."

Support for the amendments to claims 1 and 17 can be found in the Original Application. For example, the Original Application teaches that

> ***[t]he individual working stations are completed directly one after the other in the process***. The term "directly" is not taken to mean the shortest spatial distance in this connection, rather according to the invention it is essential that ***the individual functional units are passed through one after the other without interruption***. A production sequence takes place in which ***the individual working steps are directly linked together. Casting moulds and castings are conveyed through the production line in a continuous flow***. *See, e.g.,* Original Application at page 5, ¶ 2 (emphasis added).

Applicant respectfully submits that the specification provides enablement for "a first cycle time with which the finished cast parts are output is determined by a second cycle time with which the casting cores are produced," as recited in amended claims 1 and 17. Applicant directs the Examiner's attention to pages 5 and 10-14 of the specification which describe an embodiment in which the individual functional units are passed through one after the other without interruption and are directly linked together so that the mould and castings are conveyed through the production line in a continuous flow. As a result of the continuous flow without interruption of the functional units, the cycle time of the last functional unit in the production line must be determined by the cycle time of the first unit. The Examiner alleges that the cycle time of the demoulding unit can be determined by the moving speed of conveyors 12, 15, 19, or 20. Applicant

respectfully submits that the cycle time of the units and their corresponding conveyors are in fact determined by the cycle time of the core production unit 2 as to provide a continuous flow without interruption, as described on page 5 of the Original Application.

For example, the specification discloses that units exiting core production unit 2 proceed directly, without interruption in a continuous flow, to mould assembly unit 3 via transporting device 7, assembly robot 11 and section 13 of conveying device 12. *See, e.g.,* the Drawing and the Original Application at page 5, ¶ 2; page 10, ¶ 7 to page 11, ¶ 1 ("A first assembly robot 11, which takes over cores, issuing from the hardening station A and conveyed via the section 7b, from the lower part WU of the tool, is subsequently associated with the mould assembly unit 3."); and page 11, ¶ 4 ("The casting moulds G are conveyed via a conveying device 12 formed as a conveyor section along the assembly robots 9 to 11. The conveying device 12 comprises three linearly extending sections 13, 14, 15."); *see also* the Drawing. In order to prevent accumulation or gaps in the production line 1 (i.e., continuous flow without interruption), the speed of conveyor 13 must be determined by the rate the core production unit 2 produces units. That is, conveyor 13 must transport units at a rate that is determined by the cycle time of the core production unit 2 so that continuous flow occurs and units are delivered to the mould assembly unit 3 without interruption. Similarly, as units are delivered to the mould assembly unit 3, mould assembly unit 3 must accepted the units at that rate in order to prevent accumulation. As a result, unit 3 must accept units at a rate which is determined by the cycle time of production unit 2, a factor which effects the speed of conveyor 13. Therefore, the cycle time of the mould assembly unit 3 is determined by, among other

factors, the moving speed of conveyor section 13 and the cycle time of the core production unit 2 to prevent an accumulation or interruption of production units (i.e., a discontinuous flow) on conveyor section 13.

Likewise, units exiting mould assembly unit 3 proceed directly, without interruption in a continuous flow, to casting unit 4 via sections 14 and 15 of conveying device 12 and rotary table 16. *See, e.g.,* Original Application at page 5, ¶ 2 and page 14, ¶ 3 ("From section 14 of the conveying device 12 the casting moulds G arrive at section 15 which guides them to a rotary table 16. . . . As a result of a further 90° rotation of the rotary table 16 the casting mould G is conveyed to the casting station 18 of the casting unit 4."); *see also* the Drawing. In order to prevent accumulation and gaps in the production line 1, conveyor 15 must transport units away from the mould assembly unit 3 to the casting unit 4 at a rate which is determined by, among other factors, the cycle time of the mould assembly unit 3. As the cycle time of the mould assembly unit 3 is determined by the cycle time of the production unit 2, conveyor's 15 delivery of units from the mould assembly unit 3 to the casting unit 4 must be based on the cycle time of the core production unit 2, and thus the speed of conveyor 15 is determined by the cycle time of the core production unit 2 also. As the casting unit 4 must accept units delivery by conveyor 15 without interruption in a continuous flow, the cycle time of casting unit 4 is determined by, among other factors, the moving speed of conveyor sections 14 and 15 and the cycle time of the mould assembly unit 3 to prevent an accumulation or interruption of production units (i.e., a discontinuous flow) on conveyor sections 14 and

15. (Thus, one of the factors which determines the cycle time of casting unit 4 is they cycle time of the core production unit 2.)

Finally, units exiting casting unit 4 proceed directly, without interruption in a continuous flow, to demoulding unit 5b via conveying device 19, conveyor section 20, cooling unit 5a, and conveying device 21. *See, e.g.,* Original Application at page 5, ¶ 2 and page 12, ¶¶ 4-6 ("The rotary table 16 . . . is transferred to a further conveying device 19 formed as a conveyor section. . . . During cooling the casting mould G is conveyed onward via a straight-line conveyor section 20 of the cooling unit 5a. . . . From the exit of the cooling unit 5a the casting mould G . . . is conveyed via a conveying device 21 . . . to a take-over station of the demoulding unit 5b."); *see also* the Drawing. Therefore, the cycle time of the demoulding unit 5b is determined by, among other factors, the moving speed of conveying device 19 and conveyor section 20 and the cycle time of the casting unit 4 to prevent an accumulation or interruption of production units (i.e., a discontinuous flow) on conveyors 19 and 20. As the cycle time of casting unit 4 is determined by the cycle time of the core production unit 2, the cycle time of the demoulding unit 5b, which is at least partially determined by the cycle time of the casting unit 4, is thus also determined by the cycle time of the core production unit 2.

In summary, the cycle time of the core production unit 2 determines the cycle time of mould assembly unit 3, which determines the cycle time of casting unit 4, which determines the cycle time of demoulding unit 5b. This interrelationship of cycle times is necessary to ensure that "the functional units are completed directly without interruption in a continuous flow," as recited in Applicant's amended claims 1 and 17.

Applicant respectfully submits that "a first cycle time with which the finished cast parts are output is determined by a second cycle time with which the casting cores are produced" is enabled because the functional units are interrelated to produce continuous flow without interruption between the functional units. As a result of the continuous flow without interruption of the functional units, the cycle time of the last functional unit in the production line must be determined by the cycle time of the first unit. Accordingly, Applicant respectfully requests the reconsideration and withdrawal of the rejection of claims 1-23 under 35 U.S.C. § 112, ¶ 1 for lack of enablement.

CONCLUSION

In view of the foregoing, Applicant respectfully submits that the claims 1-23 are in condition for allowance and request favorable action. Applicant authorizes the Commissioner to charge any necessary fee to maintain the pendency of this application to Attorney's Deposit Account No. 50-3081. The Examiner is welcome to contact Applicant's attorney at the number below with any questions.

Respectfully submitted,

Date: December 11, 2008
Reg. No.: 55,699

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ANNOTATED SHEET